

COLLECTED ADDRESSES ON HORTICULTURE.

The Horticultural Record. Compiled by Reginald Cory. Pp. xv+500+cxvi coloured plates+half-tone photographs. (London: J. and A. Churchill, 1914.) Price 42s. net.

THIS sumptuous volume very ably fulfils the intention of its author as set forth in his preface. For it forms a very complete record of the sayings and doings of the International Horticultural Exhibition, which was held in London two years ago. In it are contained the addresses, and much of the consequent discussions, which dealt with aspects and phases of horticulture in many and varied directions. These contributions possess a permanent value, and Mr. Cory would have deserved well of everyone interested in horticulture had he done nothing more than bring these results of the exhibition together in a guise far removed from the formal and often rather repellent character commonly encountered in ordinary official publications. But he has done very much more, and the beautiful illustrations, both coloured and plain, not only add enormously to the attractiveness of the volume, but they give it a value which is permanent, and will secure for it a high place in the historical literature of the garden.

The names of those who were responsible for the main addresses provide a full and sufficient guarantee as to their authoritative character, and the addresses themselves may well be read, and re-read, by those who are interested in the particular departments with which they severally deal.

The International Exhibition succeeded in achieving much more than the mere display of concrete results of horticulture. It served as the opportunity for raising issues of great and widespread interest and importance. The legislative enactments connected with plant diseases, the problems involved in horticultural education, and other subjects, perhaps more directly horticultural were ably and fully discussed, and we have already begun to reap some of the harvest which was sown at Chelsea in 1912.

Too often, perhaps, the results which accrue from congresses of various kinds are altogether incommensurate with the amount of energy and material expended at the meetings, but this is not true of the one now under consideration. It is fitting then that the record should be a full one, and that it should be presented to the world in an attractive form. The author and the publisher have discharged their respective offices with skill, and we do not hesitate to express the opinion that the book is destined to occupy a high place in the literature of horticulture.

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OUR BOOKSHELF.

On the Effects of Volcanic Action in the Production of Epidemic Diseases in the Animal and in the Vegetable Creation, and in the Production of Hurricanes and Abnormal Atmospherical Vicissitudes. By Dr. H. J. Johnston-Lavis. Pp. xii+67. (London: John Bale, Sons and Danielsson, Ltd., 1914.) Price 3s. net.

A FEW years ago the Royal College of Physicians of Edinburgh offered their Parkin prize for an essay with the above title, and they were fortunate in being able to award it to the late Dr. Johnston-Lavis, than whom no one could be found more competent to deal with the subject. Johnston-Lavis combined with his well-known familiarity with volcanic phenomena the experience gathered during many years of medical practice, in districts constantly subject to volcanic and earthquake paroxysms.

After giving a general account of the physical and chemical phenomena exhibited during a volcanic eruption, the author proceeds to detail and examine the exaggerated and often grotesque accounts given by many authorities concerning the terrible diseases that have affected human beings, and also animals and plants, during and subsequent to volcanic outbursts. Dr. Johnston-Lavis's general conclusions, after an examination of the whole question, are that while there is no *direct* relations between volcanic phenomena and disease, there are the following *indirect* ways in which epidemic disease may be caused or increased during or after volcanic eruptions:—

- (1) The irritating and depressing effects of poisonous fumes on the eyes and throat.
- (2) The disturbance of water-courses, leading to wells and surface supplies being infected from sewage; and the interference of the ventilation of houses by the accumulation of ejected materials.
- (3) The moral depression from fear, with the hunger resulting from food-supplies being cut off, these causes being now recognised as rendering living beings less immune to infection.

That great atmospheric disturbances are occasioned by volcanic outbursts is admitted by all meteorologists.

Praktikum der Chemischen, Biologischen und Bakteriologischen Wasseruntersuchung. By Prof. O. Emmerling. Pp. vii+200. (Berlin: Gebrüder Borntraeger, 1914.) Price 7.20 marks.

As indicated in the title, this work consists mainly of a series of descriptions of the methods employed in the examination of waters. As is well known, the chemical methods employed in German practice differ in some respects from those in vogue here, and it is therefore interesting to be able to institute a comparison. Although several methods are frequently described for a particular estimation, little advice is given as to which is the best to employ, and occasionally insufficient attention is paid to the fact that very small amounts have to be estimated.

A sign of the times is the inclusion of methods

for the estimation of the radioactivity of mineral waters. A considerable amount of attention is paid to the biological, as distinguished from the bacteriological, examination, and a large number of excellent figures are given of the various species of organisms likely to be met with in waters of various types.

The least satisfactory section is that dealing with the bacteriological examination of water. In particular, the detection and enumeration of the *B. coli communis*, to which so much attention is paid in this country, is treated in an extremely inadequate manner.

Highways and Byways in Lincolnshire. By W. F. Rawnsley. With illustrations by F. L. Griggs. Pp. xx+519. (London: Macmillan and Co., Ltd., 1914.) Price 5s. net.

THIS book maintains the high reputation of the series to which it belongs. Mr. Rawnsley has throughout supposed the tourist to be travelling by motor, and has accordingly said very little about footpaths. Lincolnshire, he says, teems with splendid churches, and that is the first impression received after looking at the admirable illustrations which Mr. Griggs has provided. But attention is by no means confined to ecclesiastical architecture, for the book abounds in anecdotes, gossip, and quaint information. We read that Sir John Franklin, the famous arctic navigator, and Major James Franklin, who made the first military survey of India, were born at Spilsby in this county. On the road from Spalding to King's Lynn the author tells us he passed a field with an unfamiliar crop of stiff purplish plants which showed where the cultivation of *Isatis tinctoria*, the woad plant, which added so much to the attractiveness of our earliest British ancestors, was still kept going. Or, again, at Tothby a plague-stone is to be found, and we are given a bright account of how sufferers from the plague in the seventeenth century were fed without spreading infection. The book will appeal not only to Lincolnshire people, but also to all who love the English countryside.

Les Coordonnées intrinsèques. Théorie et Applications. By Dr. L. Braude. (*Scientia*, No. 37.) Paris: Gauthier-Villars, 1914. Pp. 100. Price 2 francs.

ALTHOUGH quite good in its way, this book does not present any very striking features. It may best be described as a collection of problems most of which could be worked out as exercises by any fairly good English mathematical student. Intrinsic equations are here obtained for the usual well-known plane curves, such as cycloid, catenary, equiangular, spiral, and they are applied to the study of associated loci such as roulettes, Mannheim's curves, pedals, or involutes and evolutes. In England this work is commonly studied in courses rightly or wrongly described as "advanced calculus," but it may be useful to teachers and others to have a book of reference in which the subject is treated separately and in greater detail than in our calculus text-books.

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LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

Accumulated Rainfall at Excessive Rates.

IN the *Monthly Weather Review* a table (No. II.) is regularly published giving accumulated amounts of precipitation when the rates equal or exceed:—

Duration	5	10	20	30	60	minutes.
Rate per hour	3.00	1.80	1.20	1.00	0.80	inches.

Unfortunately the headings and the entries are not consistent; and the purpose of the table is defeated by a tabular arrangement in which sense is sacrificed for space. The table misleads American meteorologists, even those of us familiar with the arrangement; and it is therefore not to be wondered at that the most eminent of climatologists, Dr. Julius v. Hann, read for a five-minute interval 4.19 in. of rain when the actual fall was 0.13 in. at Oklahoma, June 30, 1913 (*M.W.R.*, 41.7: 1129, July, 1913).

Prof. Hann directed attention in the *Meteor. Zeitschrift*, of which he is editor, to this remarkable rate (*Meteor. Zeits.*, vol. xxxi., part 4, p. 195), stating that it was the heaviest rainfall on record, and gravely adding that the rate, 21.3 mm. was most remarkable, and that it was scarcely conceivable that so much water could fall from the sky in five minutes.

Dr. Hann should not be held responsible for the error. A correction has been published in a recent number of the review, but few will see it, and in the confusion incident to the war it may escape general notice. We are likely, therefore, to meet the statement in years to come that official records show a rainfall of the rate given above.

With the hope of preventing future misunderstandings, I have appealed to the chief of the Weather Bureau to alter the table, and have further urged that now is an opportune time to abandon the use of inches in measurements of precipitation and use the millimetre. Is it not also high time that British rainfall was expressed, if not indeed measured, in millimetres?

Accumulated amounts at excessive rates are of interest to engineers, and it might be well to substitute for the present values, which are arbitrary and confusing, the following rational units:—

Duration	...	1	5	10	60 minutes.
Rate per hour	...	1	5	10	20 mm.

I add the heaviest known rainfalls and rates with the hope that some of the readers of NATURE will amend.

	Rate per hour	Actual duration of rate
Baguio, P.I., July 14, 1911	... 49 mm.	24 hours
Campo, Cal., August 12, 1891	... 219 "	80 minutes
Guinea, Va., August 24, 1906	... 470 "	30 "
Curtea de Argrea (Roumania), July 7, 1889	... 615 "	20 "

ALEXANDER MCADIE.

Blue Hill Observatory, October 12.

Fizeau's Experiment and the Principle of Relativity.

SIR JOSEPH LARMOR has kindly pointed out to me that it is incorrect, in the interpretation of Fizeau's experiment, to assume that the velocity of propagation of light is the group velocity, so that I must withdraw